

deciding hastily on any of these small bivalves, without seeing the living animal. This remark applies especially to the *P. nitidum*, which in general form is so similar to the *P. pusillum*, and in which, when the animal has been suffered to die in the shell, a dark stain arises on the upper part of the valves near the hinge, rendering the umbonal striæ, one of the most distinguishing characters of this species, very difficult to perceive.

June 29th, 1858.

XI.—On the Nature of the Sub-basal Membrane of *Adamsia palliata*. By PHILIP HENRY GOSSE, F.R.S.

THE clear brown membrane which covers the greater part of those shells on which the *Adamsia palliata* is adherent was long ago carefully described by Dr. Coldstream*. Its chemical composition and its nature were, however, still left undetermined; and its very origin was, only as a *probability*, attributed to the *Adamsia*. It has since been suggested,—though, so far as I know, only conjecturally, no evidence having been adduced to confirm the supposition,—that the membrane in question is an incipient corallum, in which case it might be expected to show traces of a calcareous formation.

A specimen just sent me from the Clyde has afforded me an opportunity of setting the question at rest. The *Adamsia*, a mature specimen, was attached to an old worn shell of *Trochus ziziphinus*. When I obtained it, life had ceased; and though decomposition had not set in, yet the base was beginning to separate from the support. When this separation had proceeded a little further, I found that the basal surface of the body was covered with a thin film of the clear yellow membrane, where it had been adherent to the outer lip of the *Trochus*. This film was easily detached from the animal; and this I subjected first to microscopical examination.

Under a power of 600 diameters, with transmitted light, the membrane showed the manifest characters of an epidermic slough, —a clear, structureless layer, with a multitude of irregular minute granules, a few oil-globules, a good many scattered *Cnidæ*, and some *Diatomaceæ* of various species, some of which were alive and moving actively. Exposed to a red heat, this epidermic membrane became charred, without the slightest shrivelling, or shrinking, or change of form or dimensions.

The film above described seems to have been a newly-forming structure. When the decomposition of the animal had some-

* Johnston's Brit. Zooph. ed. 2. p. 208 *et seq.*

what advanced, I easily removed it from its attachment entire, revealing the form of the shell. Of this I found that there existed only the middle whorl, the apical whorls having been broken off, apparently a long time since, and the whole of the body-whorl being deficient. The portion that remained of the shell was closely invested with the membrane, of a translucent, dark-greenish horn-colour; and this was projected from the broken edge of the shell, and continued *alone*, as a new body-whorl, formed wholly of membrane. This adventitious whorl had followed the general course of the shell-spire, but was looser and more elongate, resembling the spire of a *Vermetus*; it was projected for a full inch beyond the broken termination of the shell, and ended in a wide, irregularly-rounded mouth, with the inner lip greatly receding.

The substance of this membrane was firmer and tougher than that of the film above described; but under the microscope it agreed with it in structure, except that it was denser. I then proceeded to examine it chemically.

A large piece cut out, and laid on a plate of thin glass, I first dried, and then exposed to a red heat: *it charred, without losing its form*. I then cut out other portions, and tested them successively with the following reagents:—alcohol, water, solution of potash, acetic acid, Pettenkofer's test, nitric acid, and hydrochloric acid. Of these, alcohol, water (cold and boiling), solution of potash (cold and boiling), acetic acid (cold and boiling), produced only a negative result, the membrane remaining *perfectly unaffected* by each. Pettenkofer's test evolved *no colour*. Nitric acid (boiling) at once caused the membrane to dilate and thicken, and in a few minutes *quite dissolved it, without any colour*, except the yellowish tinge produced by the liberated colouring matter of the substance. Hydrochloric acid (boiling) reduced the membrane to a very thin film, but did not quite dissolve it: *no colour* was evolved with this test.

The boiling was performed in a watch-glass over a flame.

Not the least effervescence was discernible from the immersion of the membrane in either of the acids while cold; nor any in the heated state, except what was due to the ebullition.

From all these tests, it is perfectly evident that the membrane is *not of a calcareous nature*, and that *it is composed of chitine*. Neither in its source (the epidermic layer), therefore, nor in its composition, does it present the slightest homology with a true corallum.

Torquay, July 21, 1858.